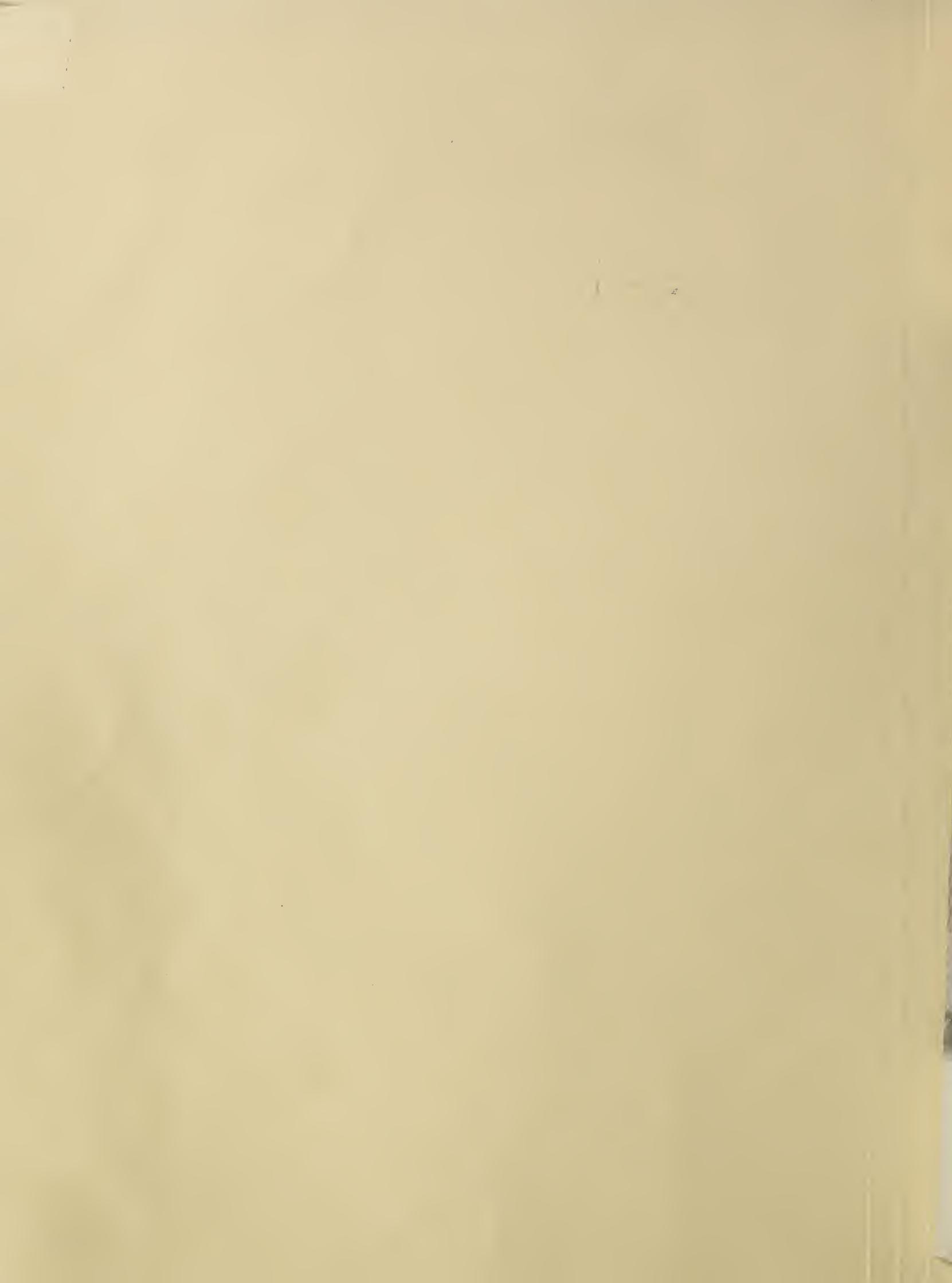


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agricultural marketing



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Cover page

Mighty Mickey Mantle, idol of millions of fans, toasts the new baseball season with a glass of milk—nature's most nearly perfect food. And the time is now, just when milk production is approaching its seasonal peak. Mantle, the New York Yankees' famous center fielder, hits a baseball farther than any man in the history of the game. He draws the biggest crowds and wins the greatest ovation whenever his appearance importunes the baseball diamond. Furthermore, he led the major leagues in slugging and ranked high with a .317 batting average and 128 runs batted in.

Milk plays a highly rich and rewarding role in everyone's life today, particularly for athletes who must build up something like superhuman vitality in order to climb the glittering heights of success.

Just as Mantle's name is a magic word to millions of persons, milk is a magic word in every household of the Nation. It's as necessary to the daily diet as a rooftop against the rain.

As for this year's milk production, first quarter figures show it's 2 percent more than a year earlier. And, if output continues at the level established in March, 1962 production could reach about 128 billion pounds.

Editor, MILTON HOFFMAN

Assistant editor, DANIEL W. HICKY



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An Initial Evaluation of the Pilot Projects



THE FOOD STAMP PROGRAM

FEDERAL food stamp projects, designed to share our Nation's food abundance with the needy, have been thoroughly evaluated since their beginning in June 1961. Recently, the U. S. Department of Agriculture announced the results of the first 6 months of operation—including a recommendation for a modest expansion in fiscal 1963.

Still on a test basis, the food stamp projects are operating in eight economically depressed areas: Franklin County, Illinois; Floyd County, Kentucky; Detroit, Michigan; the Virginia-Hibbing-Nashwauk area of Minnesota; Silver Bow County, Montana; San Miguel County, New Mexico; Fayette County, Pennsylvania; and McDowell County, West Virginia.

The evaluation report shows that in the period from June through December 1961:

- Families in the program in Detroit and in rural Fayette County, Pa., where special household food consumption surveys were conducted, made significant increases in the value of their retail food purchases and in the total value of foods used.
- Low-income families in the program had better diets than low-income families not participating in it, although

program participants still had less to eat than higher income groups. Findings in the two areas in which the household survey was made, indicate that almost one-half of the families in one area and more than one-third in the other had diets that could be considered "good".

Only slightly more than one-fourth of the non-participating low-income families had good diets.

- The increased food expenditures by participating families represented about 95 percent of the free coupons issued in Detroit and about 85 percent of those issued in rural Fayette County. Thus, the program was very effective in increasing the food purchases of participating families.

- The dollar volume of retail food store sales increased in a sample of retail food stores surveyed before and after the pilot program was inaugurated. Sales increased by 8 percent on a seasonally adjusted basis—ranging from a low of 5 percent in the stores surveyed in Detroit to a high of almost 13 percent in Montana.

- Small stores fared well in comparison with large stores in attracting food coupon shoppers. Food coupon business represented 12 percent of their total sales, compared to 5 percent for large stores.

To determine attitudes about the Food Stamp Program, the Department's survey teams interviewed a cross section of moderate and higher income families, program participants, nonparticipants among low-income families, food retailers and welfare workers in two areas—Detroit, and McDowell County, West Virginia. A large majority of those interviewed in each of these groups said they liked the Food Stamp Program and felt that it should be continued.

The report shows that from July through November last year—when all eight pilot projects were in operation—an average of about 138,000 persons participated monthly. They paid \$1.7 million a month for coupons and were given an additional \$1.1 million worth free, or in other words, they paid 63 percent of the coupon's total value and the Government's share was 37 percent.

"Compliance with regulations governing the issuance and use of food coupons has been satisfactory," the report states.

After the first 10 months of operation, only 11 food retailers, out of some 4,000 participating, have been suspended for violations since the beginning of the program. For the most part, these violations have involved (1) sale of non-food items for food coupons, and (2) in fewer instances, grocers purchasing cou-

pons for cash at a discount. Two of the 11 suspended were recently indicted by Federal Grand Juries for violations falling under both categories.

Of the program's effect on farmers, the report says:

"Experience with the pilot projects indicates that the additional food purchasing power generated by a food stamp program could provide general support to the domestic demand for food and therefore, act to bolster farm income."

"An expanded program could be expected to result in an increase in the volume of food marketed through commercial channels."

The program replaced in the eight pilot areas the direct donation to needy families of foods acquired by the Department of Agriculture in its surplus-removal and price-support operations.

It appears that this replacement would result in "considerable offsetting costs" for the program, the report states, noting, however, that comparisons of cost between this program and the food donation program are difficult to make.

Emphasized in the report is the conclusion that although Federal food assistance programs do reach a group of needy families not now covered by State and local welfare programs, any special Federal food program should be operated to supplement these State and local

efforts rather than substitute for them.

Under the food stamp plan, eligible families pay an amount for food coupons that they could normally be expected to spend for food. In return they receive coupons of greater value, to enable them to buy additional food. The coupons are used to buy any *domestically produced food* item, excluding alcoholic beverages.

If, eventually, the Food Stamp Program were offered to all communities in the country, many would *not* participate, the report predicts, explaining that:

"Because of the necessary investment of time, staff, and money on the part of State and local governments the program does not appear to be practical for those areas of the country with a relatively small proportion of needy families, or where the need for a food assistance program is temporary or seasonal."

As yet, there has not been sufficient time to fully analyze all of the data collected from research studies of the program in order to make a complete determination of its effectiveness in improving diets and increasing the consumption of agricultural commodities.

Likewise, more time is needed to conduct a definitive analysis of the data to determine the probable impact of a large-scale program on specific commodities and on farm income and farm prices generally.

Studies, particularly on food consumption by participating families, need to be conducted in additional areas to supplement the data collected in Detroit, Michigan, and Fayette County, Pennsylvania, because these areas are not necessarily typical of many areas in which the stamp plan might operate in the future.

As for the future of the program, the report advises that it "be continued on an essentially pilot basis" with a moderate expansion during the next fiscal year within \$50 million and within existing legislative authority.

The report notes that over a 5-year period the maximum expansion might reach around 4 million persons at an annual cost of about \$360 million. Further analysis and studies are needed to provide a more detailed evaluation of the impact of such a program on food consumption and diets and on farm prices and income, the report states.

A copy of the complete report on the initial evaluation of the pilot food stamp projects is available from the Marketing Information Division, Agricultural Marketing Service, USDA, Washington 25, D. C. Ask for AMS-472.



Program operates entirely through private industry. All distribution of foods is made through regular channels of trade.

Drying Shelled Corn for the Commercial Market



Experiments to improve the design and operation of grain-drying equipment are being conducted by marketing researchers of U.S. Department of Agriculture and Purdue University with these facilities. Corn is dried in the center, in the rectangular column, a small version of a commercial continuous-flow dryer. From the dryer, the corn is moved to the round bins at the left, where aeration and storage experiments are made. When high-moisture corn is received faster than the dryer can handle it, the excess is held in the hermetically sealed bin at the right. This airtight bin is also used with an air-conditioning system for experiments on holding of wet corn.

By GEORGE H. FOSTER

THE SPEED demons of today's high-ways may have their counterparts in the modern handling of products such as shelled corn. In the case of corn, however, the object is to get greater use out of the equipment, rather than the thrill of speed.

For example, dryers can be made to handle more corn when the temperature is raised to dry the corn more quickly. But excessively high temperatures can be as risky as driving a car at an excessively high speed.

Instances of damage to shelled corn caused by excessively high temperatures include low germination, unsatisfactory milling quality, cracked kernels, or other damage that lowers the quality and market value of corn.

Researchers of the USDA's Agricultural Marketing Service, working in cooperation with Purdue University, have found that high-temperature drying, like high-speed driving, can be riskier under some conditions than others. They found it is especially hazardous to use high

temperatures on shelled corn with a high moisture content.

In all of the AMS-Purdue tests, corn with a 30 percent moisture content had more stress cracks and germinated more poorly than corn with a moisture content of 20 percent. High moisture content was responsible for more stress cracks than the temperature at which the corn was dried.

Both the 20 and 30 percent moisture corn were dried to a final moisture content of about 15 percent. Most of the cracks in the kernels developed when the moisture content reached a level of 17 to 14 percent.

Germination of the corn was also reduced when it was dried at 240°. Such corn could not be marketed for use as seed and it's unlikely that it would be bought for use as cornstarch, since germination is also used as a guide to indicate that the corn has the quality needed for conversion into starch.

The AMS-Purdue marketing researchers are also studying other factors that influence the market quality of artificial dried corn. One factor is the volume

of air that is blown through corn as it dries.

Air blown through the corn at a rate of 75 cubic feet per minute per bushel partly overcame the hazard of using a high temperature to dry the corn, in preliminary tests. Separate tests were run at 190° and 240° F.

Corn dried in this manner may be suitable for the manufacture of cornstarch, but not for use as seed. More research will be necessary before all the details are known about the influence of a high airflow on the market quality of corn.

Additional factors to be studied include the optimum drying time, type of dryer, moving and mixture of grain during drying, among others. Further AMS-Purdue tests may produce a better understanding of such factors, and lead to improved design and operation of drying equipment.

The author is a staff member of the Transportation and Facilities Research Division, AMS, stationed at Lafayette, Indiana.

Consumers Spent A FOURTH of Their Food Money ON MEAT

THERE'S no doubt about it, meat is a big part of our food budget. In 1961 Americans spent \$16 billion on beef, pork, veal, and lamb. That's about a fourth of all money spent on food during the year and adds up to about \$277 per family. As a Nation

bill of \$34 per person bought 134 pounds of meat. By 1961 a meat bill close to 3 times as high at \$90 per person bought 161 pounds of meat.

But even more important to the family budget is the fact that only 4.5 percent of our take-home pay was

instance, a \$1 spent for choice grade beef in 1961 meant 56 cents for the producer. On the other hand, the man who produced our lamb chops got 48 cents of the dollar spent for choice cuts. Pork fell between these two extremes, with 53 cents of the retail dollar going back to the farmer.

There are two important reasons for the drop in the percent of our income that goes to meat.

In the first place, as consumers earn more they are able to spread their buying into more kinds of goods and services. Therefore, the percent of that income spent on meat declines even though the number of dollars spent increases a great deal. Secondly, farm production and marketing are more efficient. Because of better farm management, greater use of machinery, and improved feeds, the American farmer can raise more hogs, beef cattle, and sheep with considerably less labor—and provide more meat to consumers at a reasonable price.

For example, through increased efficiency, an hour of labor devoted to livestock on farm or ranch results in 28 percent more meat going to market than it did 40 years ago. Even more important has been the still greater gain in efficiency of producing feed crops, both per hour of labor and per acre. Our big feed-producing resources have contributed to our abundance in meat.

Greater efficiency in producing feed and livestock has not only put more meat into the diet of consumers while claiming a smaller percent of their income—it has also improved the quality of meat and held prices much below the rise in income.

Meat quality has improved in the past 40 years. There is more tender, grain-fed beef suitable for grilling and roasting, and more of the leaner "meat-type" pork.

The weighted retail price of meat averaged about 30 cents a pound in 1921. Forty years later it had more than doubled, averaging about 65 cents a pound. But in the same four decades, income per person nearly quadrupled, jumping from \$508 a year after taxes, to \$1,969. Thus the price of meat rose only a little more than half as fast as income.

we spent more money on meat than on household utilities, radios, and television sets all together.

These are a few of the figures compiled by the Economic Research Service of the U.S. Department of Agriculture in a recent study of what has happened to meat production and consumption in the past four decades.

In the early 1920's the annual meat

needed to purchase meat in 1961. Compare this with 40 years ago when our meat bill required 6.7 percent of our disposable income. And, today there is more in the grocery cart.

Not all money spent on meat goes to the producer. In fact, nearly half the meat dollar pays for processing and marketing, though the figure varies depending on the type of meat. For

Data used in this article are taken from Technical Bulletin No. 1253, "Demand and Prices for Meat," by Harold F. Breimyer. A free copy of the bulletin is available from the Information Division, Economic Research Service, USDA, Washington 25, D. C.



Under normal conditions, Florida oranges don't always come out of the groves looking as deeply orange as you find them in retail stores. But a lack of good orange color has no relation to the interior quality of the natural-color Florida oranges.

Marketing Natural-Color ORANGES

By MICHAEL G. VAN DRESS and NICK HAVAS

NOT TOO OFTEN, perhaps, but sometimes men are called on to give Mother Nature a helping hand. This is what happens in the case of Florida oranges for, under normal conditions, they don't always come out of the groves looking as deeply orange as you find them in the stores.

That's why a portion of the Florida orange crop reaching the fresh market is subjected to a process that adds color to the skin or peel of the fruit that is generally expected and accepted by consumers.

Because of the scope and expense of this color process and increased public attention to additives resulting from recent legislation affecting their use, U.S. Department of Agriculture marketing researchers, in cooperation with the Florida Citrus Commission, undertook experiments to find the value of "color-add" as a factor in marketing and consumer acceptance of Florida oranges. In the fall of 1959, the first of three experiments was initiated.

The volume of oranges put through the coloring process varies from year to year and is generally heavier during the early and late part of the harvest season.

Failure of oranges to color fully and uniformly during *early* season and re-

greening of oranges that often occurs in late season are results of an overabundance of chlorophyll.

Due to these influences, color is added to make the fruit look better, not to affect quality. Oranges to which color is added are required by State law to be mature and of good quality. In fact, color-added fruit from Florida moving into interstate trade must meet more rigid minimum standards than natural-color oranges in measuring interior quality.

Cost of adding color to oranges is estimated to be about 5 cents per box and during the 1960-61 season it cost the industry nearly \$750,000. While the coloring of Florida oranges has been practiced for a quarter of a century, its effect on consumer buying habits had not been evaluated until the present series of tests.

In the fall of 1959, the first of these experiments was initiated concurrently in two cities. The study was repeated in the spring of 1960, and again in the spring of 1961.

Cleveland was picked to represent consumer reactions to natural-color Florida oranges in marketing areas of the Midwest where consumers were used to color-added fruit. Philadelphia was chosen to reflect eastern markets which

handled mostly the natural-color Florida oranges.

The test results showed that consumers in Cleveland bought significantly fewer Florida oranges when offered only natural-color. The sales ratio was 5 to 4 in favor of color-added fruit. This ratio increased to 2 to 1 when color-added and natural-color were displayed side by side.

In Philadelphia, where consumers were familiar with natural-color oranges, sales remained the same whether natural-color or color-added fruit was offered.

Sales from the combination displays, with equal display areas at both test sites, were 36 percent greater in Cleveland and 20 percent greater in Philadelphia than average sales from displays offering only one of the two types of test fruit.

This tends to strengthen the commonly accepted merchandising principle that sales can be increased by offering consumers greater variety. It indicates also that some consumers have strong preferences and may forego purchasing when their choice is not available. The resulting sales increase of test oranges, when displayed side by side, had no measurable effect on closely related products such as tangelos, tangerines, oranges not being tested,

(continued on page 16)

USDA-DONATED FOODS

THE Eastern seaboard's worst winter storm strode inland recently with a mounting intensity which even weather observers failed to predict. Yet, USDA's Food Distribution personnel were standing by to help feed the many thousands of suddenly stricken storm victims.

The disaster area was farflung—including the coastal sections of New York, New Jersey, Delaware, Maryland, Virginia, and North Carolina—and the storm's fury was felt as far south as Florida.

FDD's activities were coordinated with the State school lunch personnel, State distributing agencies, local welfare departments, family distribution officials, the Red Cross and Civil Defense. USDA personnel were the first to arrive in the storm areas, and the last to leave.

And, even after the immediate and post-disaster period had passed, FDD personnel continued their appraisal with State and local officials of the need for extending family food distribution during the recovery period.

The emergency foods were drawn from local supplies donated by USDA for use by schools, institutions and needy families. The foods included canned chopped meat, powdered skim milk, flour, cornmeal, rice, rolled wheat, peanut butter, dry beans, cheese, lard, and butter.

The USDA-donated food is automatically made available through standing authority given State distributing agencies for emergency feeding in times of national disaster, such as this storm that swept the Atlantic Coast.

Feed Atlantic Storm Victims



A street scene at Bethany Beach, Delaware, after the storm.



Mrs. Elizabeth Graef and Specialist 5th Class Harry S. Dixon prepare breakfast for flood victims, using foods donated by USDA. These pictures were taken at the Lord Baltimore High School, Millville, Delaware.



A NEW PEANUT SAMPLER

By JAMES W. DICKENS

A FASTER, more accurate device for taking samples of peanuts has been developed by marketing researchers of USDA's Agricultural Marketing Service in cooperation with North Carolina State College.

The new peanut sampler is easily operated, durable, and costs little to run. It has been approved for official use by Federal-State Inspection Service. The device also has the endorsement of the Southeastern Peanut Assn.

In operation, the new peanut sampler works somewhat like a giant vacuum cleaner. Air is blown through a pipe, which is about as thick as a baseball bat, to an opening at the bottom and is then drawn back up a somewhat smaller pipe mounted inside the first pipe.

The peanuts are forced up the inner pipe and into a cleaner, and then deposited into a holding bin. The air is recirculated through the system by a high-pressure blower. The suction is strong enough to pick up rocks and clods

of dirt that may be among the peanuts.

The opening at the bottom of the pipe is scalloped, like the edges of a pie crust, and revolves, along with the inner pipe, to which it is connected. The revolving, serrated opening helps position peanuts around the pipe, enabling it to bore down to the bottom of the load smoothly.

The new pneumatic peanut sampler can obtain top-to-bottom samples from several locations in the time it takes to obtain just one sample in the older hand-sampling method. And accurate samples can be obtained quickly from four or more trucks parked in two parallel lines, as the sampler can glide from one truck to another on overhead tracks mounted about 14 feet above the ground.

Electric motors, controlled by the operator who rides beside the sampler, move the device along the rails and raise or lower the pipe into the load of peanuts to be sampled.

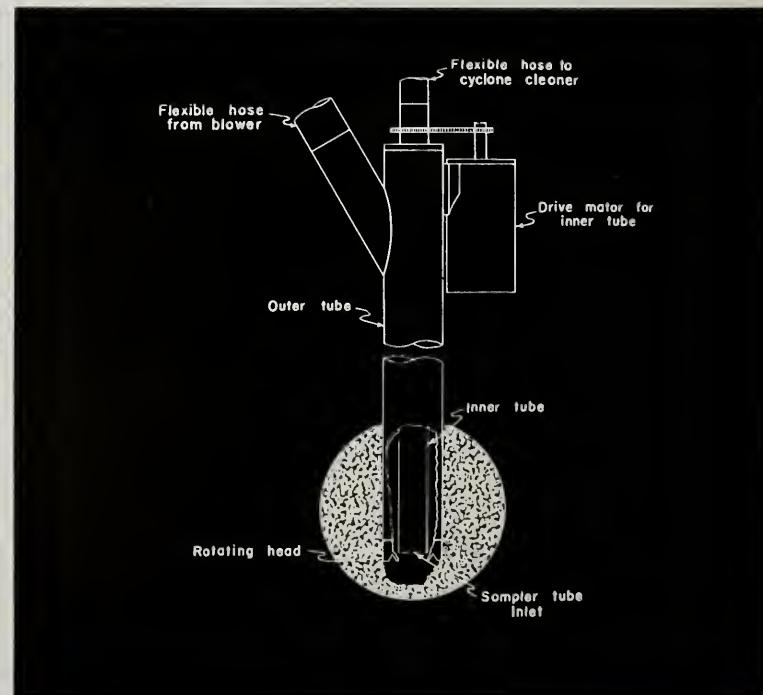
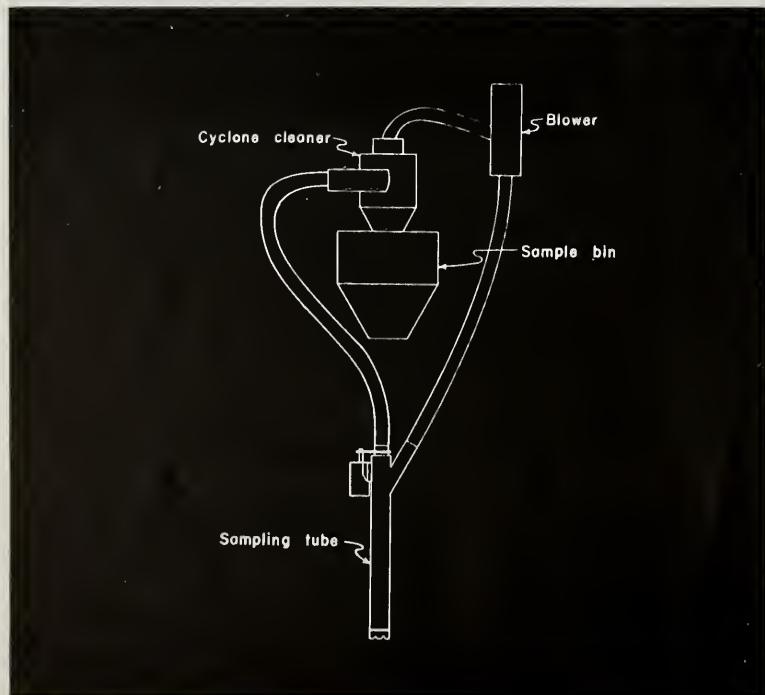
Samples are equally easy to take from

both large and small trucks. A 40-foot trailer carrying a load 13 feet high is practically as easy to obtain samples from as the smallest pick-up truck. But the same could not be said for the older, hand-sampling method.

Refinements in the original peanut sampler have been made by the Georgia Tech Research Institute, and the device was tested—with excellent results—by the AMS Fruit and Vegetable Division. The Federal-State Inspection Service and the Southeastern Peanut Association also cooperated in the development of the pneumatic sampler.

The author is a staff member of the Field Crops and Animal Products Branch, Market Quality Research Division, AMS. He is stationed at Raleigh, N. Carolina. On April 27, Mr. Dickens will be awarded the National Peanut Council's "Golden Peanut Research Award" for his contributions to the peanut industry.

Left, an illustration of pneumatic sampling system. Right, the pneumatic sampler tube (photo is an enlargement of the lower half of diagram at left). In operation, air is forced downward between inner and outer tube and is drawn back up inner tube. Movement of air picks up peanuts and foreign material ahead of sampling tube as it is lowered into the load of peanuts. A serrated head is attached to inner tube which is rotated by electric motor. The rotating head orients the peanuts around the edge of outer tube so that the tube will descend smoothly through mass of peanuts. The sample drawn up the inner tube is removed from air stream by the cyclone cleaner which causes the sample to fall into bin. Air then passes through blower and is forced back down between inner and outer tubes of sampling tube to the entrance of the inner tube where it picks up more samples of peanuts.

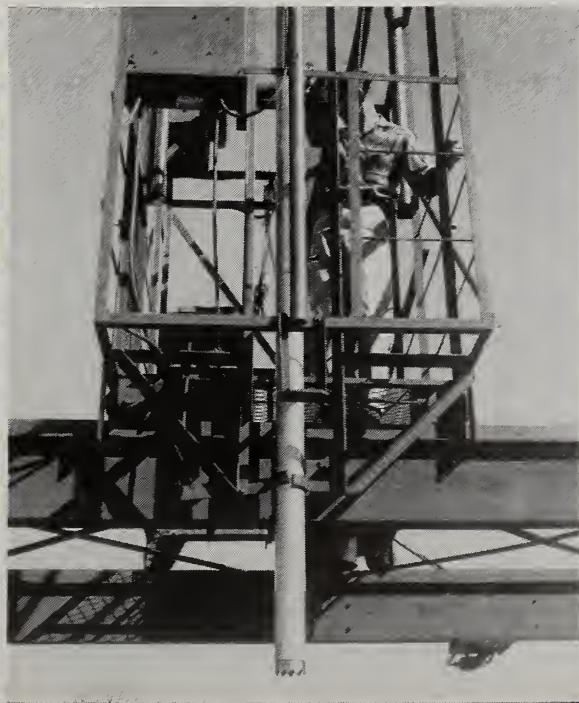




Two loads of peanuts in position for the sampling operation. A sampling probe is being lowered into one load. Machine moves about on a coordinated track system so that any position in the loads of peanuts can be probed. The track system will clear truckloads of peanuts as high as 13½ feet above the ground.

Bottom left, a view of the inlet of the sampling tube showing the serrated head which is attached to the rotating inner tube. The space between the inner and outer tube allows air to be forced downward. Photo in center is a close-up view of the sampling machine showing the tube in a partially lowered position. In the right is a view of the sampling tube just before it enters a load of peanuts.

*Marketing researchers
from the Market Quality
Research Division, Agricultural
Marketing Service, develop
a faster, more accurate
device for sampling peanuts.*



By ROY A. BALLINGER and ROBERT G. MARTIN

THE CHANGING SUGAR INDUSTRY

One of the unique features of the refining plant, front right, is a new process (continuous absorption) for purifying and removing color from sugar solutions.



THE sugar industry, like many another these days, is undergoing sweeping changes—from mechanization in the fields to the development of product “blends” tailored to the needs of industrial users. Recent work by marketing researchers in USDA’s Economic Research Service indicates the degree to which this industry is turning to new methods.

In the sugar fields, machines have already replaced hand labor in most U.S. mainland and offshore producing areas. For example, since 1948, Hawaiian producers, the most highly mechanized group, have reduced their labor requirements from 31 to 18 manhours to produce enough cane to yield one ton of raw sugar.

At the same time, newer and better varieties of cane, along with greater use of fertilizers and pesticides, have upped sugar yields in Hawaii from 8.35 tons per acre in 1938 to 9.03 tons in 1960.

Even Puerto Rican growers, who use far more hand labor than Stateside producers, have managed to reduce their labor requirements by about 36 percent since 1948. But they still have some way to go. Current labor requirements for Puerto Rico are 90 manhours to produce enough cane for one ton of raw sugar.

Improved techniques for processing cane and beets have also reduced labor needs. One of the new methods is the use of the automatic centrifugal to separate the molasses from the sugar in mills and refineries.

Another is an ion-exchange process to produce specialty sugars by passing it through synthetic resins. Ways have also been found to store juice for several months before final processing at the factory. These, and other developments, have either reduced the amount of labor needed or increased the amount of sucrose obtained from beets and sugar cane.

ONE of the newest technological advances is the “continuous absorption process,” adaptable to either cane sugar refineries or sugar beet factories. This process for purifying and de-coloring sugar solutions is used in place of the more expensive batch method of purification.

One result of such changes in technology has been the shift to bigger plants with greater capacity, while smaller and older operations are closing down.

Some 71 plants processed sugar beets in the U.S. in 1948; in 1960, the figure was down to 62. Yet in the same period, total production rose by 70 percent. The number of mainland mills processing



Top, interior of warehouse where over 60,000,000 pounds of raw sugar can be stored. Bottom, a pneumatic "blower-truck" for handling bulk dry sugar. In 1960, bulk granulated shipments amounted to 21 percent of total sugar purchased by largescale users.



cane declined from 62 in 1948 to 48 in 1960—but total production increased 30 percent.

When it comes to marketing sugar, bulk handling is the noteworthy change.

Though the conveyor belts, scoops, and installations for bulk handling are expensive to set up, once in, they pay their own way. Industry estimates indicate that as much as 40 to 55 cents per hundredweight may be saved by bulk handling. As a result, bulk handling has largely displaced bagging, even in such areas as Puerto Rico, where labor is plentiful and wages comparatively low.

The same shift to bulk has occurred, though to a lesser extent, in the distribution of refined sugar. Shipments of liquid refined sugar, for example, more than doubled between 1949 and 1960, going from 10 to 25 percent of total deliveries to industrial and institutional users.

In the past five years, shipments of bulk granulated sugar have increased even faster, though the total volume of granulated shipments is still smaller than the liquid form. In 1960 bulk granulated shipments amounted to 21 percent of the total sugar purchased by large-scale users.

BLENDING is an attempt to tailor products of the sugar industry to the needs of the consumer. Blending combines sugar and some other sweetener such as corn syrup for use by canners, candy makers, bakers, and other manufacturers. These ready-mixed blends offer users greater convenience, lower operating costs, and improved sanitation.

With per capita use of sugar remaining fairly steady, the industry enjoys a comfortably regular rise in total consumption as our population increases. But it also faces an increase in competition from other sweeteners.

During the 1950's more and more customers turned to such alternate products as corn sweeteners for all or part of their requirements. Consumption of corn sweeteners, for example, rose from 12 to 14 pounds per person between 1948 and 1960, and is now a little over 12 percent of the combined consumption of sugar and corn sweeteners.

At the same time, the use of non-caloric sweeteners, such as saccharin, increased 25 percent.

In many ways, the marketing pattern for sugar is a reflection of the changing eating habits of Americans—more processed, premixed foods, and more persons eating out. In 1949 bakers, canners, and other industrial outlets took about

(continued on page 16)

THE CHANGING MARKET



MILK PLENTIFUL

THE merry month of May will bring much more than a wealth of bright flowers to winter-weary households. It will also bring an array of popular plentiful foods, which should mean favorable prices for the family food budget.

Heading the list is milk and dairy products, now nearing the peak production period. In fact, a record-breaking output of milk is in prospect this year.

Other plentiful foods include a seasonally heavy production of eggs, expected to sell at more favorable prices than a year earlier. Broiler-fryers are in excellent supply, too, and second-quarter output should show a sharper than usual increase.

Canned freestone peach supplies are running heavier than in the two previous years, while stocks of vegetable fats and oils continue at record levels. The month also features National Frozen Food Week—May 12 to 19.

POTATO STORAGE

MODERN research can offer no substitute for careful storage management, on which the success of modern facilities, temperature controls, and other equipment is dependent. But a surprising amount of losses result in even the most modern potato storages every year because some of these fundamentals are overlooked.

Temperature and humidity during the first few weeks of storage are particularly important. Potatoes undergo their greatest rate of shrinkage through loss of water into the surrounding air during this period.

Wounds heal faster, reducing both shrinkage and disease development, at a temperature of 68° F. and a high humidity (75 percent or higher) than at a temperature of 46°. Usually, in commercial practice, potatoes are held at about 60° for 1 to 3 weeks to permit healing of wounds.

However, when late blight, blackleg, leak, or field freezing is present, shorter curing is desirable as high temperatures favor decay in potatoes thus affected. If late blight or field freezing is severe no curing should be attempted; the potatoes should be cooled as quickly as possible. They should be stored for only a short period.

Uniform temperatures throughout storage bins can best be controlled with a forced-air circulation system with dampers for recirculation or ventilation. Marketing researchers from USDA's Agricultural Marketing Service advise that cooling is more rapid and holding temperatures will be more uniform if air is directed to flow through the bin of potatoes instead of around the bin as in shell circulation. However, moisture loss is less with shell circulation.

After the first month of storage, potatoes should be inspected periodically, perhaps biweekly, for discoloration, skin lesions, or other disease symptoms.

Signs of late blight, such as tan, yellow, and—later—reddish and purplish lesions indicate that it's high time to grade the potatoes and market the sound ones as soon as possible.

AMS specialists in potato quality research recommend a holding temperature of about 50° for potatoes that are to be processed; potatoes for seed or table stock should be held at about 39° if stored longer than four months.

The marketing researchers caution against prolonged chilling near potatoes' freezing point (29° F.). Objectionable flavors develop in such cases, and germination of seed potatoes may be reduced. Those that do germinate may produce poor plant growth and low yields. Also, potatoes are more likely to bruise and crack at such low temperatures.

Temperatures close to freezing may produce internal discolorations of potatoes. Mahogany browning, for instance, is an aptly named condition which can develop in potatoes stored for 20 weeks or longer at about 33°. Potatoes with this condition have such an undesirable appearance that they cannot be used in cooking.

In the final stage of storage, bruising and internal black spot can be minimized by adjusting the temperature to about 50° for about two weeks before removing the potatoes from storage.

Material used in this article is based on research reports by marketing researchers Wilson L. Smith and Harvey V. Toko of USDA's Agricultural Marketing Service and Edward F. Johnston of the Maine Agricultural Experiment Station.

RESEARCH REPORTS

For information on all marketing research reports issued by AMS, write to our Marketing Information Division for their monthly checklist of reports.

- Dairy Products Featured on Plentiful Foods List
- Better Storage Practices for Potatoes
- Mealworm, Granaries' Enemy, Is a Fisherman's Delight
- Aeration Cuts Cost of Drying Rice
- What a Banker Looks for When Making a Loan

DRYING RICE

GROWERS as well as consumers of rice, one of history's oldest and most popular foods, stand to benefit from findings of a team of researchers from USDA's Agricultural Marketing Service.

Some highlights of a recent study are that the aeration of rough rice between treatments in heated air dryers can cut down substantially the cost of drying as well as yield additional benefits. For example, researchers found that as much as \$5,000 a year might be shaved from costs in a plant drying 200,000 barrels of rice a year.

Other findings show that the reduction of the time per barrel in which dryers are in use makes the facilities available to handle larger volumes of rice during

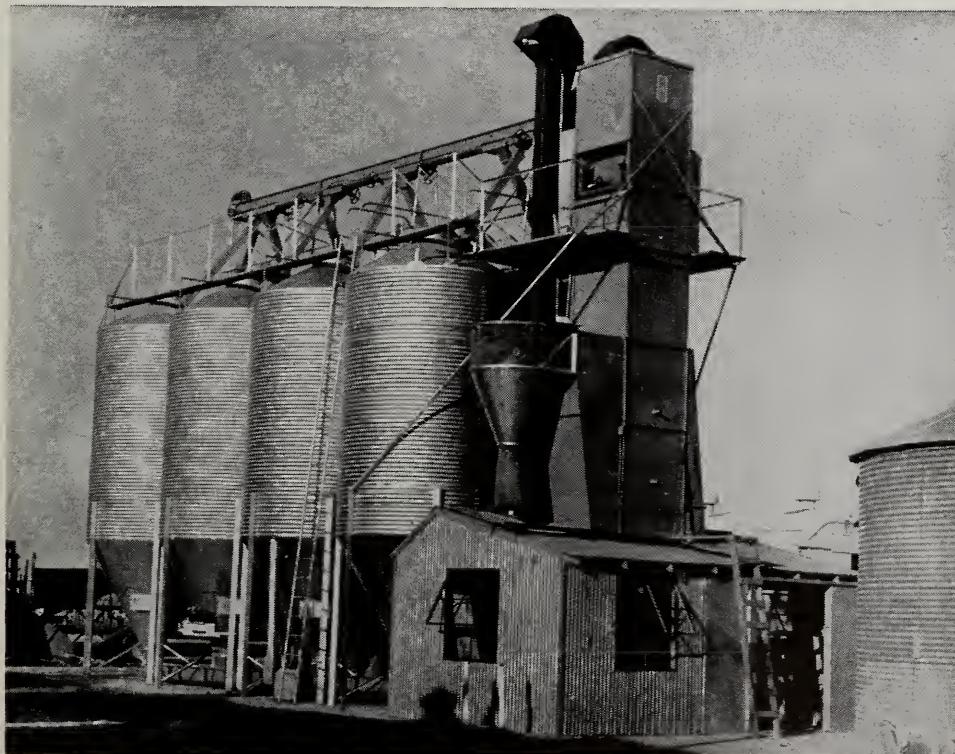
the rather brief harvest periods when dryers usually are congested with receipts.

The study compares costs, methods, and rates of drying when the heated air dryers alone are used and when aeration is practiced after each time the rice passes through the dryers. Use of aeration reduced the time the rice was in the dryers by around 20 percent.

This study is another part of AMS' marketing research program aimed at reducing costs of marketing farm products and maintaining their quality.

For further details, send for "Drying Rice in Heated Air Dryers with Aeration as a Supplementary Treatment," Marketing Research Report No. 508. Single free copies are available from the Office of Information, USDA, Washington 25, D. C.

Experimental rice dryer at Rice-Pasture Experiment Station, Beaumont, Texas.



MAKING A LOAN

CREDIT has become increasingly important to modern farming. However, a recent study by the Economic Research Service showed that farmers are apt to overlook the personal attributes that lenders rate high for a good credit risk.

The study was undertaken using selected groups of farmers in Montana and their private and Government sources of short-term credit. While the results indicated that these farmers are willing to use short-term credit they have noticeably different ideas than bankers of what makes a good credit risk.

Here's what the banker looks for when making a loan: financial progress, ambition, loan history, management practices, cooperativeness, family buying habits, farming experience, formal credit rating, cooperation of the family, mechanical skills, the level of family living, flexibility of production, scale of operations, and financial backing. And they are in that order of importance.

Chiefly, lenders and borrowers differed on the importance of two attributes—ambition and scale of operations. All lenders felt that ambition was high on the list of desirable characteristics. But, in talking to farmers, bankers and credit managers have tended to over emphasize the scale of operation, giving farmers the impression that the size of their plant was more important in getting the loan.

On the other hand, the borrower's age was given little consideration by either lenders or farmers. Managerial ability, though, was by far the most desirable attribute of all to the borrowers surveyed.

All this indicates that farmers might do well to know their lenders more thoroughly, and emphasize their plans for making the best use of the credit they desire.

THE CHANGING MARKET

FISHERMAN'S DELIGHT

ANYTHING new on the daily horizon—whether it's the "twist", or some development in the fisherman's paradise—often awakes a surprisingly large market.

Now, Agricultural Marketing Service researchers have come up with something of a novelty: it's instant fishbait, which has shown an unexpected appeal. In fact, it appears to be lighting the fisherman's heart second only to the thought of instant money.

Nothing could have been farther from the researchers' intentions when they studied how to control the mealworm, an insect smaller than a paper clip. To the uninitiated, mealworms are the larvae of certain beetles that infest granaries, bakeries, and so on—and are injurious to flour and meal.

But, since mealworms are considered a tasty morsel by many fish, the researchers began getting inquiries—not only on how to control the insects—but also on how fishing enthusiasts could raise them.

When the researchers issued a leaflet describing how to control the mealworm, they also included information on how to raise a colony large enough to supply an average fisherman's needs whenever he gets the urge to take off for the old fishing hole.

Easy-to-follow instructions tell how to make a box to raise the mealworms. And it's as simple as casting a line: all it takes are scraps of lumber, a few nails, and a thin sheet of aluminum from the hardware store.

The leaflet, "Mealworms" tells where to find the insects needed to "pioneer" the colony. Some wheat bran, a little graham flour, and commercial dried meat scraps—an occasional piece of carrot, potato, or lettuce—plus a couple of



Growth Through Agricultural Progress

handfuls of mealworms, are all that's needed to get started.

The result: inexpensive, instant fishbait, conveniently available whenever the lure of fishing brightens the day. Single free copies of this revised mealworm leaflet, No. 195, may be obtained from the Office of Information, United States Department of Agriculture, Washington 25, D. C.

SUGAR INDUSTRY

(continued from page 18)

42 percent of the total deliveries in this country. At present, they buy about two-thirds of all sugar consumed in the United States. In the same period, sales to hotels and restaurants rose 116 percent, though purchases by retail stores increased only slightly.

The authors are staff members of the Marketing Economics Division, Economic Research Service, USDA.

FLORIDA ORANGES

(continued from page 7)

and grapefruit.

In addition to the sales test, consumer interviews were conducted at point-of-purchase during the final week of each experiment in both cities. Results of this test show that about 70 percent of the nearly 2,400 shoppers interviewed know that color is sometimes added to the surface of oranges.

Fifty percent of the shoppers who bought the natural-color fruit objected to color being added to oranges while only 25 percent of those who bought the color-added had objections to the coloring process.

Results indicated that the demand for Florida oranges would weaken in markets having consumer preference like Cleveland if natural-color fruit only were offered. Consumers in these markets could possibly learn to accept natural-color fruit if exposed to it over an extended period of time, as were consumers in Philadelphia where color-added and natural-color oranges enjoyed equal acceptance.

Appearance, quality, and promotion of competing fruit must be considered. But, if a decision were made to market natural-color Florida oranges only, it is possible that consumers would be influenced by a well directed advertising and consumer educational program aimed at informing shoppers that a lack of good orange color has no relation to the interior quality of natural-color Florida oranges.

The authors are staff members of the Economic Research Service, USDA. A copy of the full report, MRR-537, which will be issued shortly, can be obtained from the Information Division, Agricultural Economics, USDA, Washington 25, D. C.